

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

| | | |
|---------------------------------|---|---------------------------|
| In re the application of: |) | |
| |) | |
| Jankowski et al. |) | Group Art Unit: 1795 |
| |) | |
| Application No.: 10/612,226 |) | Examiner: LEE, Cynthia K. |
| |) | |
| Filed: July 1, 2003 |) | Attorney Docket No. |
| |) | LLNLP006/IL-11019 |
| For: MEMS-BASED FUEL CELLS WITH |) | |
| INTEGRATED CATALYTIC FUEL |) | Date: July 13, 2009 |
| PROCESSOR AND METHOD THEREOF |) | |
| |) | |

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

ATTENTION: Board of Patent Appeals and Interferences

REPLY BRIEF (37 C.F.R. § 1.193)

This Reply Brief is being filed within two (2) months of the mailing of the Examiner's Answer mailed on May 13, 2009.

Following is an issue-by-issue reply to the Examiner's Answer.

Issue #1:

Claims 1-13, 28, 29, 31-44 and 47 have been rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

Group #1: Claims 1-13, 28, 29, 31-44 and 47

In the final Office Action mailed Aug. 5, 2008, claims 1-13, 28, 29, 31-44 and 47 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

In the Appeal Brief filed Feb. 3, 2009, which is herein incorporated by reference, the rejection of claims 1-13, 28, 29, 31-44 and 47 under 35 U.S.C. § 112, first paragraph, was traversed as being improper.

In section (6) "Grounds of Rejection to be Reviewed on Appeal" of the Examiner's Answer mailed May 13, 2009, the Examiner withdrew the § 112 rejection of claims 1-13, 28, 29, 31-44 and 47.

Issue #2:

Claims 1-7, 9, 10, 12, 13, 28, 29, 31, 32, 34, 37, 39-41 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Maru (US4365007, hereinafter "Maru") in view of Ito (US5227258, hereinafter "Ito") and in further view of Keskula (US2004/0151955, hereinafter "Keskula").

Group #1: Claims 1, 4-6, 9, 10, 13, 28, 29, 31, 32, 34, 37, 39-41

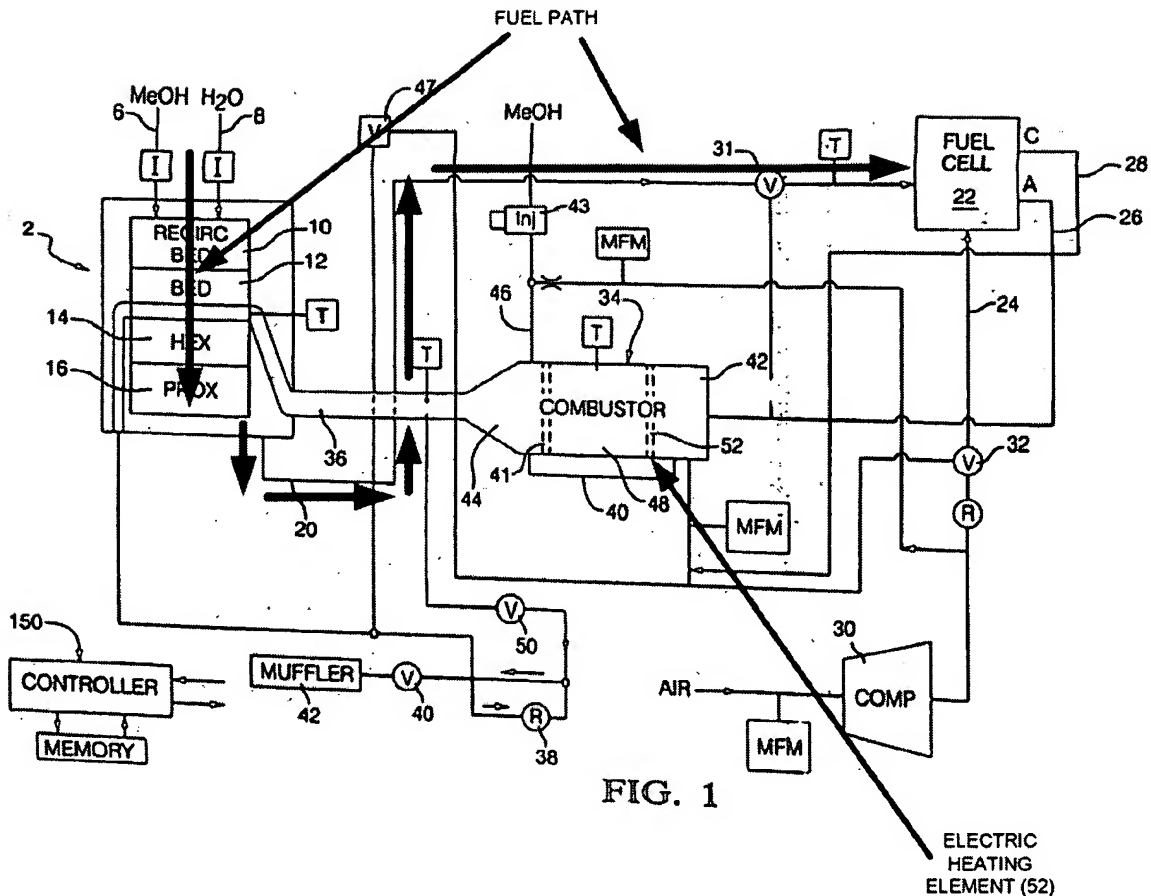
In the final Office Action mailed Aug. 5, 2008, claims 1, 4-6, 9, 10, 13, 28, 29, 31, 32, 34, 37, 39-41 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Maru in view of Ito and in further view of Keskula.

In the Appeal Brief filed Feb. 3, 2009, which is herein incorporated by reference, the rejection of claims 1, 4-6, 9, 10, 13, 28, 29, 31, 32, 34, 37, 39-41 under 35 U.S.C. § 103(a) was traversed as being improper.

In section (10) "Response to Argument" of the Examiner's Answer mailed May 13, 2009, the Examiner focused arguments on rebutting the Appellant's arguments that all of the claimed limitations are not taught by the combination of prior art, and that the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose.

Specifically, the Examiner has contended that in Keskula, the heating element 52 "heats the combustor in which the heat is used to heat the incoming fuel, and thus is located along the fuel path upstream from the fuel cell stack." (See "Response to Argument" of the Examiner's Answer mailed May 13, 2009). The Examiner refines this analysis by noting that the combustor 34 indirectly heats the fuel path through use of a heat exchanger 14, which lies in the fuel path. The Examiner argues that since the heating element 52 is contained in the combustor 34, and the combustor 34 indirectly heats the fuel path, the *effect* of the heating element 52 is part of the fuel path. (See "Response to Argument" of the Examiner's Answer mailed May 13, 2009) (*emphasis added*). However, the claims require more than what the Examiner has shown. Specifically, the claims require "an *electric heater* positioned in at least one location selected from: between the electrodes, and *along a fuel path* at a point upstream from the fuel cell stack for heating the fuel prior to the fuel reaching the fuel cell stack." (See claim 1) (*emphasis added*). All that the Examiner has shown that Keskula discloses is that an effect of the combustor 34 lies along a fuel path. The Examiner has failed to show that an electric heater is positioned along a fuel path at a point upstream from the fuel cell stack, as claimed. The mere effect of the heater is not enough. Moreover, as will be discussed in more detail below, Keskula's heating element does not run once the combustor is started, and so does not appear to even provide the effect proffered by the Examiner.

As is clearly shown in Keskula Fig. 1 (*annotated below*) and paragraphs [0035-0037], the heating element 52 is in the combustor 34, not along a fuel path at a point upstream from the fuel cell stack for heating the fuel prior to the fuel reaching the fuel cell stack as claimed. As shown in Keskula Fig. 1, effluent from the combustor 34 is used to heat the heat exchanger 14, and then is dumped to the atmosphere. The heat exchanger 14 in turn heats the catalyst of the fuel processor for enhancing the formation of hydrogen gas from feed materials 6 and 8, which is in turn sent to the fuel cell 22 via line 20.



Keskula itself identifies that the heating element is not used once the combustor is started, and is not effecting any heating on the fuel path at all. "After start-up, as described hereafter, the electric heater 52 is no longer required since the fuel will be vaporized by the exhaust gases emanating from the exhaust end 44 of the combustor 34." (See Keskula, paragraph [0040]). As this portion of Keskula plainly admits, the heating element 52 is effecting the fuel flow to the combustor, not the fuel path to the fuel cell 22. In fact, once start-up is completed, the heating element is no longer used, and the fuel cell is not used until start-up is complete. Therefore, even if the Examiner's arguments that the effect of the heating element 52 on the combustor 34 can be transferred to effect the fuel path since the combustor effects the fuel path, since the heating element 52 is turned off before the fuel cell is used (i.e., after start-up), then it never is used at the same time as the fuel cell 22 and cannot effect the fuel path at that time. Therefore, contrary

to the assertions of the Examiner, the effect of the heating element 52 is not at a point upstream from the fuel cell stack for heating the fuel prior to the fuel reaching the fuel cell stack.

For the Examiner to claim that the *effect* of the heating element 52 causes heating of the fuel path would be synonymous with claiming that an electric block heater for warming an automobile's combustion engine just until the engine is first started has the effect of heating the automobile exhaust gas. Thus, the relationship between the cause and effect of Keskula's heating element is too tenuous to be considered in a § 103 rejection.

Also, in the Advisory Action mailed Oct. 31, 2008, the Examiner argues that Keskula's heater (Keskula Fig. 1, element 52) heats the combustor 34, the heat from which is used to heat the incoming fuel, and thus is located along a fuel path. Appellant respectfully disagrees, and asserts that the Examiner fails to consider the plain language of claim 1. Claim 1 requires "an electric heater positioned in at least one location selected from: between the electrodes, and along a fuel path at a point upstream from the fuel cell stack for heating the fuel prior to the fuel reaching the fuel cell stack." Keskula fails to disclose an electric heater in the claimed position. The Examiner alleges that the *effect* of the combustor 34 heats the fuel in the fuel path, and therefore the *effect* of the combustor 34 is in the fuel path. The Examiner alleges that the claim does not require the electric heater to be in direct contact with the fuel itself, and since Keskula does not disclose a combustor or a heater along the fuel path, the Examiner has tried to allege that the *effect* of the combustor is not only in the fuel path, but that this satisfies the claimed limitation. The Appellant disagrees. While the claim does recite an effect of the heater ("for heating the fuel"), it also requires physical placement of the heater in the Markush group, in one approach that the electric heater is positioned along a fuel path at a point upstream from the fuel cell stack. In Keskula, the heating element 52 is in the combustor 34. Effluent from the combustor 34 is used to heat the heat exchanger 14, and then is dumped to the atmosphere. The heat exchanger 14 in turn heats the catalyst of the fuel processor for enhancing the formation of hydrogen gas from feed materials 6 and 8, which is in turn sent to the fuel cell 22 via line 20. The heating element 52 is not along a fuel path upstream of the fuel cell stack, and neither is the effect of the heating element 52, which only appears to affect the combustor 34 during startup. Thus, even the

proffered effect of Keskula's heating element 52 does not appear to be as proffered by the Examiner.

In addition, the Examiner has pointed to the Appellant's Fig. 10 from which to draw additional reasons for rejection. However, this figure is only one of many embodiments described and claimed by the Appellant. The Examiner argues that Appellant's Fig. 10 discloses two separate fuel paths, one from 206 to 208, and one from 214 to 222. However, there is no description that these fuel paths are mutually exclusive, and it is shown that the fuel proceeding through the chamber 205 would gain heat from the electric heater 210 prior to exiting in path 208 and then being fed to path 214, possibly with some further processing, thereby resulting in the electric heater 210 being positioned along a fuel path at a point upstream from the fuel cell stack for heating the fuel prior to the fuel reaching the fuel cell stack.

Accordingly, not all claim elements are taught or suggested by the combination of references cited by the Examiner, and the rejection is improper as failing the third element of the *Graham* test.

The Examiner has alleged that Maru when modified by Ito and Keskula would not result in an invention unsatisfactory for its intended purpose. The Appellant respectfully disagrees. If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

The Examiner admitted that the combustor in Keskula burns fuel, and that any fuel passed to the combustor would be burned up and unable to feed the fuel cell. Note that Keskula burns MeOH in the combustor, as well as uses MeOH to generate the fuel by catalytic reaction. If Maru's fuel were drawn through Keskula's combustor, the fuel would burn up into combustion byproducts that Maru's reforming catalyst 8 would not be able to convert (or "reform") into sufficient quantities of hydrogen. The fuel would have to be passed through the combustor 34 because this is where the heating element 52 is located, along the fuel path to the combustor, not along the fuel path to the fuel cell 22.

The Appellant's argument is simple. If the fuel is to be heated by the heating element 52 from Keskula, the fuel would pass by the heating element 52 as described in Keskula, and as is further stated in Keskula, the heating element initiates a combustion of a fuel mixture in the combustor. (See Keskula, paragraph [0040]). Therefore, by combining the heater (combustor 34) from Keskula with the invention in Maru which allegedly discloses an arrangement of electrodes and anodes in the fuel cell, there would be no fuel left to process in the fuel cell after it was burned up prior to entering the fuel cell in Maru. It is not proper for the Examiner to combine references where proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose. *In re Gordon, supra*. Here, in order to combine the references, the combustor would have to be inline with the fuel feed to the fuel cell since the combustor is where the heating element is located. This proposed arrangement, as admitted by the Examiner, would burn the fuel up before it ever reached the fuel cell. Therefore, this arrangement is unsatisfactory for its intended purpose. Accordingly, the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, and there is no suggestion or motivation to make the proposed modification. *In re Gordon, supra*.

The Examiner has tried to reconcile this result by stating: "It appears that the Applicant is getting the fuel path of the fuel cell and the fuel path of the combustor mixed up." (See "Response to Argument" of the Examiner's Answer mailed May 13, 2009) (*emphasis removed*). The Appellant is not confused as to which fuel path is feeding which device. The Examiner is trying to argue that the *effect* of the heating element may be transferred along the fuel path upstream of the fuel cell, but none of the references, Keskula, Maru, and Ito, disclose or propose such an arrangement. The Examiner may not move components in prior art references to suit the needs of the rejection, nor should the Examiner merely ignore what such a combination of features will actually create. Because the Examiner has attempted just this, the rejection is improper.

Claims 4-6, 9, 10, 13, 28, 29, 31, 32, 34, 37, 39-41 depend from claim 1, and therefore incorporate all the limitations of claim 1. The rejection of claim 1 is believed to be improper as argued above. By virtue of their dependence, the rejection of claims 4-6, 9, 10, 13, 28, 29, 31, 32, 34, 37, 39-41 is also believed to be improper. If an independent claim is nonobvious under 35

U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Group #2: Claims 2, 3, 7

In the final Office Action mailed Aug. 5, 2008, claims 2, 3, 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Maru in view of Ito and in further view of Keskula.

In the Appeal Brief filed Feb. 3, 2009, which is herein incorporated by reference, the rejection of claims 2, 3, 7 under 35 U.S.C. § 103(a) was traversed as being improper.

In section (10) “Response to Argument” of the Examiner’s Answer mailed May 13, 2009, the Examiner did not focus any arguments on claims 2, 3, 7. Instead, the Examiner relied on the previous arguments regarding claim 1.

Appellant reiterates the arguments made above regarding the improper rejection of claim 1, from which claims 2, 3, 7 depend. In addition, the rejection is improper because it fails to consider the dimensional limitations. No showing has been made where the dimensions are found in the art. Accordingly, the rejection fails the third prong of the *Graham* test. Moreover, there has been no showing of any motivation to select the claimed ranges. Accordingly, the rejection fails the third element of the *Graham* test.

Group #3: Claim 12

In the final Office Action mailed Aug. 5, 2008, claim 12 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Maru in view of Ito and in further view of Keskula.

In the Appeal Brief filed Feb. 3, 2009, which is herein incorporated by reference, the rejection of claim 12 under 35 U.S.C. § 103(a) was traversed as being improper.

In section (10) "Response to Argument" of the Examiner's Answer mailed May 13, 2009, the Examiner focused arguments on supporting the Examiner's Official Notice in the final Office Action mailed Aug. 5, 2008.

The Examiner has stated that MPEP § 2144 requires that the Appellant must specifically point out the supposed errors in the Examiner's action which would include stating why the noticed fact is not considered to be common knowledge or well-known in the art. The Examiner continues by alleging that the Appellant has not properly challenged the Official Notice, and points to Thielman (US6454978). The relevant portion cited by the Examiner states: "It is to be further understood that plate and channel sizes and shapes vary greatly as a function of individual design determinations, electrical requirements and end use, i.e., stationary, vehicular or portable applications." (*See* Thielman, col. 6, lines 50-53).

The Appellant reiterates that the rejection is deficient for improperly taking Official Notice. The Examiner indicates that the claimed dimension is a result effective variable. The courts have held that a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). In the instant case, the Examiner indicates that the size of the flow passage is a result effective variable because the size of the flow passage controls the amount of gas being reformed and the amount of energy generated by the fuel cell. In addition, the Examiner indicated that channel sizes combined with plate sizes and shapes vary greatly, as mentioned in Thielman. Therefore, claim 12's limitation of a flow passage having at least one dimension less than 5 millimeters does not in and of itself make the channel dimension a result-effective variable. There is no indication of what recognized result is achieved by limiting this dimension in such a way. Therefore, there is no way to determine from the claim itself what is controlled by limiting the size of the channel to such a size. Therefore, the Examiner is still taking Official Notice improperly, and accordingly the rejection is improper.

In response to the Examiner's assertion that the Appellant has not specifically pointed out the supposed errors in the Official Notice, the Appellant cites page 20 of the Appeal Brief which

states: "In two of Appellants' responses, filed in January 17, 2008 and on Oct. 3, 2008, Appellant respectfully challenged the taking of official notice, and respectfully asserted that it was not notorious and well known in the art of fuel cells at the time of invention to have flow passages within the claimed dimensions as suggested by the Examiner. As evidence of the erroneous taking of official notice, Appellants pointed to the absence of any mention that the prior art teaches or suggest the claimed dimensions or of controlling a fuel flow rate by passage thickness." The Examiner has never addressed this grounds with an actual showing in the art.

Also, in the two responses filed in January 17, 2008 and on Oct. 3, 2008, Appellant requested a specific showing in the art of fuel cells of flow control using dimensions of a flow passage, and that met all of the *Graham* criteria, and further that predated Appellant's date of invention. No such showing has been made. In continuance of this specifically identified error in the Examiner's rejection, the Appellant points out that Thielman also does not show flow control using dimensions of a flow passage. It would be very difficult indeed to control flow to the degree necessary for fuel cell operation using only the size of a flow passage. It is much easier and more effective to control flow using a pump, valve, actuator, or some other flow control device, rather than attempting to produce non-standard piping of dimensions specifically tailored to control flow based on a myriad of other flow affecting criteria, such as temperature, pressure, density, etc. Accordingly, the Examiner has failed to address the Appellant's properly supported argument that the rejection is deficient for improperly taking Official Notice.

In addition, claim 12 depends from claim 1, and therefore incorporates all the limitations of claim 1. The rejection of claim 1 is believed to be improper over Maru in view of Ito and in further view of Keskula. Since Thielman has merely been added to allegedly show additional limitations of claim 12, the rejection is improper. If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

For any of the foregoing reasons, the rejection of claim 12 is improper.

Issue #3:

Claims 8 and 47 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Maru in view of Ito and Keskula as applied to claim 1, and further in view of Carter (US2003/0232230, hereinafter “Carter”).

Group #1: Claims 8 and 47

In the final Office Action mailed Aug. 5, 2008, claims 8 and 47 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Maru in view of Ito and Keskula, and further in view of Carter.

In the Appeal Brief filed Feb. 3, 2009, which is herein incorporated by reference, the rejection of claims 8 and 47 under 35 U.S.C. § 103(a) was traversed as being improper.

In section (10) “Response to Argument” of the Examiner’s Answer mailed May 13, 2009, the Examiner did not focus any arguments on claims 8 and 47. Instead, the Examiner relied on the previous arguments regarding claim 1.

Appellant reiterates the arguments made above regarding the improper rejection of claim 1, from which claims 8 and 47 depend.

Issue #4:

Claims 11, 39 and 40 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Maru in view of Ito and Keskula and in further view of Mallari (US2003/0044674, hereinafter “Mallari”).

Group #1: Claims 11, 39 and 40

In the final Office Action mailed Aug. 5, 2008, claims 11, 39 and 40 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Maru in view of Ito and Keskula, and further in view of Mallari.

In the Appeal Brief filed Feb. 3, 2009, which is herein incorporated by reference, the rejection of claims 11, 39 and 40 under 35 U.S.C. § 103(a) was traversed as being improper.

In section (10) "Response to Argument" of the Examiner's Answer mailed May 13, 2009, the Examiner did not focus any arguments on claims 11, 39 and 40. Instead, the Examiner relied on the previous arguments regarding claim 1.

Appellant reiterates the arguments made above regarding the improper rejection of claim 1, from which claims 11, 39 and 40 depend.

Issue #5:

Claim 42 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Maru in view of Ito and Keskula and in further view of Sederquist (US2003/0003332, hereinafter "Sederquist").

Group #1: Claim 42

In the final Office Action mailed Aug. 5, 2008, claim 42 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Maru in view of Ito and Keskula, and further in view of Sederquist.

In the Appeal Brief filed Feb. 3, 2009, which is herein incorporated by reference, the rejection of claim 42 under 35 U.S.C. § 103(a) was traversed as being improper.

In section (10) "Response to Argument" of the Examiner's Answer mailed May 13, 2009, the Examiner did not focus any arguments on claim 42. Instead, the Examiner relied on the previous arguments regarding claim 1.

Appellant reiterates the arguments made above regarding the improper rejection of claim 1, from which claim 42 depends.

Issue #6:

Claims 1 and 33 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Holladay (US7077643, hereinafter “Holladay”) in view of Ito and in further view of Keskula.

Group #1: Claims 1 and 33

In the final Office Action mailed Aug. 5, 2008, claims 1 and 33 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Holladay in view of Ito and in further view of Keskula.

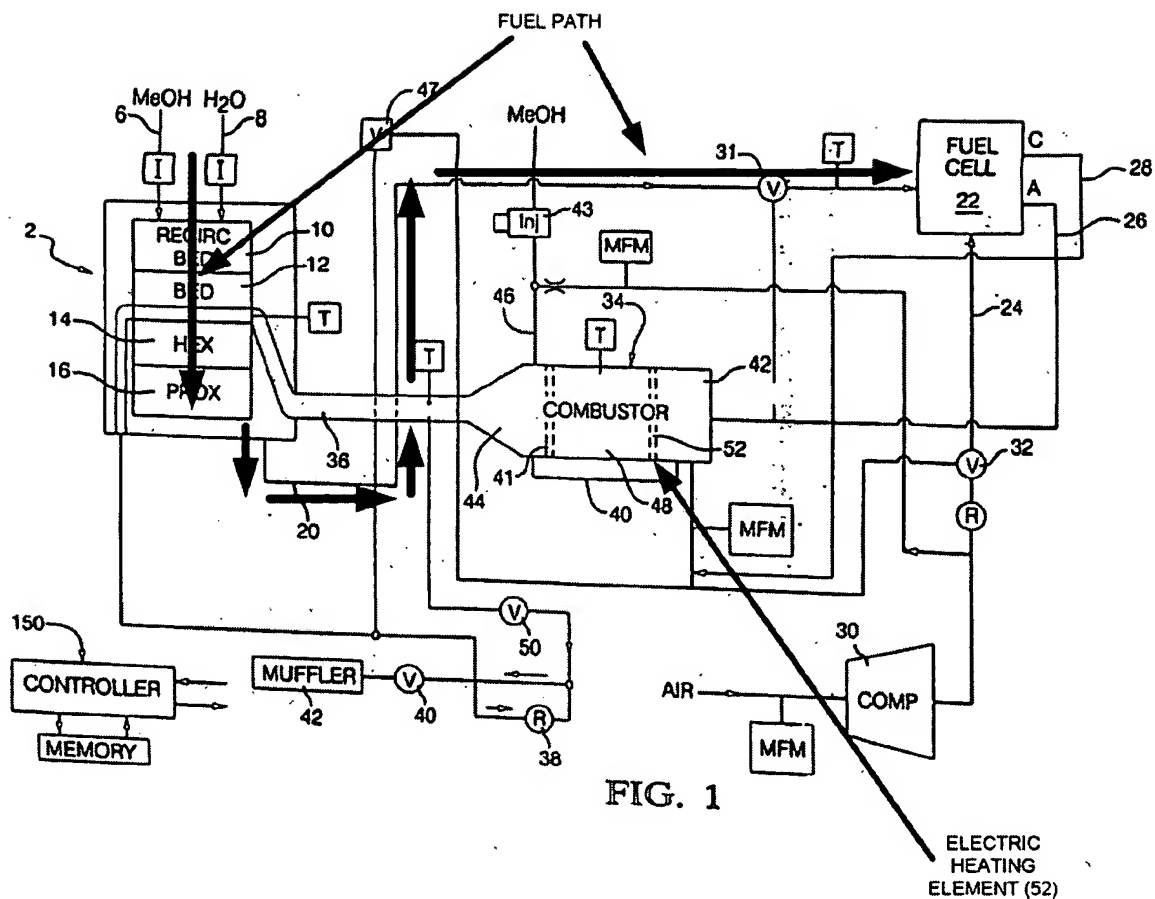
In the Appeal Brief filed Feb. 3, 2009, which is herein incorporated by reference, the rejection of claims 1 and 33 under 35 U.S.C. § 103(a) was traversed as being improper.

In section (10) “Response to Argument” of the Examiner’s Answer mailed May 13, 2009, the Examiner focused arguments on rebutting the Appellant’s arguments that all of the claimed limitations are not taught by the combination of prior art, and that the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose.

Specifically, the Examiner has contended that in Keskula, the heating element 52 “heats the combustor in which the heat is used to heat the incoming fuel, and thus is located along the fuel path upstream from the fuel cell stack.” (See “Response to Argument” of the Examiner’s Answer mailed May 13, 2009). The Examiner refines this analysis by noting that the combustor 34 indirectly heats the fuel path through use of a heat exchanger 14, which lies in the fuel path. The Examiner argues that since the heating element 52 is contained in the combustor 34, and the combustor 34 indirectly heats the fuel path, the *effect* of the heating element 52 is part of the fuel path. (See “Response to Argument” of the Examiner’s Answer mailed May 13, 2009) (*emphasis*

added). However, the claims require more than what the Examiner has shown. Specifically, the claims require “an *electric heater* positioned in at least one location selected from: between the electrodes, and *along a fuel path* at a point upstream from the fuel cell stack for heating the fuel prior to the fuel reaching the fuel cell stack.” (See claim 1) (*emphasis added*). All that the Examiner has shown that Keskula discloses is that an effect of the combustor 34 lies along a fuel path. The Examiner has failed to show that an electric heater is positioned along a fuel path at a point upstream from the fuel cell stack, as claimed. The mere effect of the heater is not enough. Moreover, as will be discussed in more detail below, Keskula’s heating element does not run once the combustor is started, and so does not appear to even provide the effect proffered by the Examiner.

As is clearly shown in Keskula Fig. 1 (*annotated below*) and paragraphs [0035-0037], the heating element 52 is in the combustor 34, not along a fuel path at a point upstream from the fuel cell stack for heating the fuel prior to the fuel reaching the fuel cell stack as claimed. As shown in Keskula Fig. 1, effluent from the combustor 34 is used to heat the heat exchanger 14, and then is dumped to the atmosphere. The heat exchanger 14 in turn heats the catalyst of the fuel processor for enhancing the formation of hydrogen gas from feed materials 6 and 8, which is in turn sent to the fuel cell 22 via line 20.



Keskula itself identifies that the heating element is not used once the combustor is started, and is not effecting any heating on the fuel path at all. "After start-up, as described hereafter, the electric heater 52 is no longer required since the fuel will be vaporized by the exhaust gases emanating from the exhaust end 44 of the combustor 34." (See Keskula, paragraph [0040]). As this portion of Keskula plainly admits, the heating element 52 is effecting the fuel flow to the combustor, not the fuel path to the fuel cell 22. In fact, once start-up is completed, the heating element is no longer used, and the fuel cell is not used until start-up is complete. Therefore, even if the Examiner's arguments that the effect of the heating element 52 on the combustor 34 can be transferred to effect the fuel path since the combustor effects the fuel path, since the heating element 52 is turned off before the fuel cell is used (i.e., after start-up), then it never is used at the same time as the fuel cell 22 and cannot effect the fuel path at that time. Therefore, contrary

to the assertions of the Examiner, the effect of the heating element 52 is not at a point upstream from the fuel cell stack for heating the fuel prior to the fuel reaching the fuel cell stack.

For the Examiner to claim that the *effect* of the heating element 52 causes heating of the fuel path would be synonymous with claiming that an electric block heater for warming an automobile's combustion engine just until the engine is first started has the effect of heating the automobile exhaust gas. Thus, the relationship between the cause and effect of Keskula's heating element is too tenuous to be considered in a § 103 rejection.

Also, in the Advisory Action mailed Oct. 31, 2008, the Examiner argues that Keskula's heater (Keskula Fig. 1, element 52) heats the combustor 34, the heat from which is used to heat the incoming fuel, and thus is located along a fuel path. Appellant respectfully disagrees, and asserts that the Examiner fails to consider the plain language of claim 1. Claim 1 requires "an electric heater positioned in at least one location selected from: between the electrodes, and along a fuel path at a point upstream from the fuel cell stack for heating the fuel prior to the fuel reaching the fuel cell stack." Keskula fails to disclose an electric heater in the claimed position. The Examiner alleges that the *effect* of the combustor 34 heats the fuel in the fuel path, and therefore the *effect* of the combustor 34 is in the fuel path. The Examiner alleges that the claim does not require the electric heater to be in direct contact with the fuel itself, and since Keskula does not disclose a combustor or a heater along the fuel path, the Examiner has tried to allege that the *effect* of the combustor is not only in the fuel path, but that this satisfies the claimed limitation. The Appellant disagrees. While the claim does recite an effect of the heater ("for heating the fuel"), it also requires physical placement of the heater in the Markush group, in one approach that the electric heater is positioned along a fuel path at a point upstream from the fuel cell stack. In Keskula, the heating element 52 is in the combustor 34. Effluent from the combustor 34 is used to heat the heat exchanger 14, and then is dumped to the atmosphere. The heat exchanger 14 in turn heats the catalyst of the fuel processor for enhancing the formation of hydrogen gas from feed materials 6 and 8, which is in turn sent to the fuel cell 22 via line 20. The heating element 52 is not along a fuel path upstream of the fuel cell stack, and neither is the effect of the heating element 52, which only appears to affect the combustor 34 during startup. Thus, even the

proffered effect of Keskula's heating element 52 does not appear to be as proffered by the Examiner.

In addition, the Examiner has pointed to the Appellant's Fig. 10 from which to draw additional reasons for rejection. However, this figure is only one of many embodiments described and claimed by the Appellant. The Examiner argues that Appellant's Fig. 10 discloses two separate fuel paths, one from 206 to 208, and one from 214 to 222. However, there is no description that these fuel paths are mutually exclusive, and it is shown that the fuel proceeding through the chamber 205 would gain heat from the electric heater 210 prior to exiting in path 208 and then being fed to path 214, possibly with some further processing, thereby resulting in the electric heater 210 being positioned along a fuel path at a point upstream from the fuel cell stack for heating the fuel prior to the fuel reaching the fuel cell stack.

Accordingly, not all claim elements are taught or suggested by the combination of references cited by the Examiner, and the rejection is improper as failing the third element of the *Graham* test.

Claim 33 depends from claim 1, and therefore incorporates all the limitations of claim 1. The rejection of claim 1 is believed to be improper over the combination of prior art for the reasons stated above. By virtue of claim 33's dependence on claim 1, the rejection of claim 33 is also believed to be improper. If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Issue #7:

Claims 43 and 44 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Maru in view of Ito and Keskula and in further view of Shioya (US6777118, hereinafter "Shioya").

Group #1: Claims 43 and 44

In the final Office Action mailed Aug. 5, 2008, claims 43 and 44 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Maru in view of Ito and Keskula and in further view of Shioya.

In the Appeal Brief filed Feb. 3, 2009, which is herein incorporated by reference, the rejection of claims 43 and 44 under 35 U.S.C. § 103(a) was traversed as being improper.

In section (10) "Response to Argument" of the Examiner's Answer mailed May 13, 2009, the Examiner did not focus any arguments on claims 43 and 44. Instead, the Examiner relied on the previous arguments regarding claim 1.

Appellant reiterates the arguments made above regarding the improper rejection of claim 1, from which claims 43 and 44 depend. The rejection of claim 1 is believed to be improper over Maru in view of Ito and in further view of Keskula. Since Shioya has merely been added to allegedly show additional limitations of claims 43 and 44, the rejection is improper. If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

In view of the remarks set forth hereinabove, independent claim 1 is deemed allowable, along with any claims depending therefrom.

In the event a telephone conversation would expedite the prosecution of this application, the Examiner may reach the undersigned at (408) 971-2573. For payment of any additional fees due in connection with the filing of this paper, the Commissioner is authorized to charge such fees to Deposit Account No. 50-1351 (Order No. LLNLP006).

Respectfully submitted,

By: /Dominic M. Kotab/ Date: July 13, 2009
Dominic M. Kotab

Reg. No. 42,762

Zilka-Kotab, PC
P.O. Box 721120
San Jose, California 95172-1120
Telephone: (408) 971-2573
Facsimile: (408) 971-4660